UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/760,082	01/15/2004	Yasushi Abe	6453P025	1897

8791   7590   06/06/2008
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EXAMINER
SHIKHMAN, MAX

ART UNIT	PAPER NUMBER
2624	

MAIL DATE	DELIVERY MODE
06/06/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *26 February 2008*.
2a) ☒ This action is **FINAL**.   2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *12,13,18 and 19* is/are pending in the application.
   4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) *12,13,18 and 19* is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on *15 January 2004* is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All   b) ☐ Some *   c) ☐ None of:
      1. ☒ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____.
      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
   Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Response to Amendment

1.   Applicants' response to the last Office Action, filed 02/26/2008 has been entered

and made of record. Applicant cancelled claims 15, 20.

2.   Applicant's arguments with respect to claims 12, 18 have been considered but

are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3.   Claims 12, 18; 13, 19 rejected under 35 U.S.C. 103(a) as being unpatentable

over Donescu (PGPUB-DOCUMENT-NUMBER: 20020051560) in view of

Lumini, "Wavelet-based Image Watermarking Scheme", Information Technology: Coding

and Computing, 2000. page(s): 122-127

() Regarding Claims 12, 18:

12. (Currently Amended) *An image processing apparatus, comprising:*

a characteristics extracting unit to extract characteristics of wavelet coefficients (E14) *of*

one (one) *or a plurality of rectangular regions* (Fig2 top: 6 sub-bands) *dividing an image,*

wherein the characteristics of wavelet coefficients extracted by the characteristics

extracting unit (E14) *are based on the frequency components* (E14. wavelet coefficients are

frequency components.) *included in each of the rectangular regions;* (Fig2 top: 6 sub-

bands)

an embedding specification determination unit (Fig 4) *to determine, in accordance with the extracted characteristics of the wavelet coefficients* (E14. Fig 4 "DWT coefficients") *for each rectangular region,*

(Fig2 top: 6 subbands. E32. "[0154] At the end of the spatio-frequency transformation of the DWT type, the blocks of coefficients are distributed in frequency sub-bands with different resolution levels.")

an embedding specification

(E30. [0140] "E30 estimates the ...number of information bits which can be inserted..."
[0145] At the end of ... E30, a set of valid sub-blocks ...to insert an information bit...)

of digital watermark data with respect to the wavelet coefficients,

(Fig 4. "[0152] Alternatively, certain message bits can be associated preferentially with certain spatio-frequency sub-bands of the spectral decomposition of the coefficients.")

a digital watermark embedding unit (E18, E33) *to embed the digital watermark data into the wavelet coefficients for each rectangular region* (sub-band) *in accordance with the embedding specification* ([0145] At the end of ... E30, a set of valid sub-blocks ...to insert an information bit...) *of each rectangular region.* (sub-band)

Donescu discloses that certain sub-bands can get more bits than others, [0152] "certain message bits can be associated preferentially with certain spatio-frequency sub-bands."

Donescu discloses everything except, *when a rectangular region includes a lot of high frequency components, the embedding specification determination unit determines that an amount of embedding information of the digital watermark data is heavy; and when the*

rectangular region does not include a lot of high frequency components, the embedding

specification determination unit determines that an amount of embedding information of the

digital watermark is light;

Lumini discloses, *when* *a rectangular region includes a lot of high frequency*

components, (P4 Col2 "Detailed images") *the embedding specification determination unit*

determines that an amount of embedding information of the digital watermark data is heavy; (P3

Col1, "a stronger signature could be impressed inside detailed images".)

and when the rectangular region does not include a lot of high frequency components,

(P4 col2 "Homogeneous Images") *the embedding specification determination unit*

determines that an amount of embedding information of the digital watermark is light; (P3 Col1,

"a lower number of coefficients could be modified in homogeneous images,

characterized by large regions with few color variations".)

As Lumini discloses, it is desirable to use strong signature for high frequencies

and a weak signature for low frequencies; this method increase robustness while

minimizing image degradation. P3 Col1, "a stronger signature could be

impressed inside detailed images, where slight modifications are less visible" Therefore

it would have been obvious to one of ordinary skill in the art at the time of the invention,

to use Lumini's varying embedding strength method in Donescu, to minimize image

degradation.

() **Regarding Claim 13, 19**:

13. (Original) The image processing apparatus as claimed in claim 12, wherein the

amount of embedding information of the digital watermark data is varied.

(Donescu. [0152] "certain message bits can be associated preferentially with certain spatio-frequency sub-bands.")

4.   Claims 12, 18; 13, 19 rejected under 35 U.S.C. 103(a) as being unpatentable over Donescu (PGPUB-DOCUMENT-NUMBER: 20020051560) in view of Rhoads (PGPUB-DOCUMENT-NUMBER: 20040001608), "Image processor and image processing method".

() **Regarding Claims 12, 18**:

Donescu rejection is the same as the one above; only Rhoads is different.

Rhoads discloses, *when a rectangular region includes a lot of high frequency components, the embedding specification determination unit* ([0093] embedder) *determines that an amount of embedding information of the digital watermark data is heavy;* ([0093] "increase watermark intensity in frequency bands and spatial areas where there is more image activity")

and when the rectangular region does not include a lot of high frequency components, the embedding specification determination unit ([0093] embedder) *determines that an amount of embedding information of the digital watermark is light;* ([0093] "decrease watermark signal intensity to make the watermark imperceptible to an ordinary observer")

As Rhoads discloses, it is desirable to "increase watermark intensity in frequency bands and spatial areas where there is more image activity" based on HVS model to minimize image quality degradation. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention, to use Rhoads' method in Donescu,

increase intensity where there is more image activity to reduce degradation and
decrease intensity in inactive areas to reduce image degradation.

() **Regarding Claim 13, 19**:

*13. (Original) The image processing apparatus as claimed in claim 12, wherein the
amount of embedding information of the digital watermark data is varied.*
(Donescu. [0152] "certain message bits can be associated preferentially with certain
spatio-frequency sub-bands.")

Conclusion

5.   Applicant's amendment necessitated the new ground(s) of rejection presented in
this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP
§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37
CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE
MONTHS from the mailing date of this action. In the event a first reply is filed within
TWO MONTHS of the mailing date of this final action and the advisory action is not
mailed until after the end of the THREE-MONTH shortened statutory period, then the
shortened statutory period will expire on the date the advisory action is mailed, and any
extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of
the advisory action. In no event, however, will the statutory period for reply expire later
than SIX MONTHS from the date of this final action.

6.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to MAX SHIKHMAN whose telephone number is (571)270-

1669. The examiner can normally be reached on Monday-Friday 8:30AM-6:00PM EST.

        If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, JINGGE WU can be reached on (571) 272-7429. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

        Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

                                        /Max Shikhman/
                                        Examiner, Art Unit 2624
                                        6.2.2008

        /Brian Q Le/
        Primary Examiner, Art Unit 2624